

What is claimed:

1 1. A rice plant wherein:

2 (a) the growth of said plant is resistant to inhibition by one or more of the following herbicides, at  
3 levels of herbicide that would normally inhibit the growth of a rice plant: imazethapyr, imazapic,  
4 imazapyr, nicosulfuron, sulfometuron methyl, imazaquin, imazamox, chlorimuron ethyl, metsulfuron  
5 methyl, rimsulfuron, thifensulfuron methyl, tribenuron methyl, pyriithiobac sodium, or a derivative  
6 of any of these herbicides; and

7 (b) said plant is a derivative of at least one of the plants selected from the group of plants with ATCC  
8 accession numbers 203419, 203420, 203421, 203422, 203423, 203424, 203425, 203426, 203427,  
9 203428, 203429, 203430, 203431, 203432, 203433, aaaaa, bbbbb, ccccc, ddddd, eeeee, fffff, and  
10 ggggg; and

11 (c) said plant has the herbicide resistance characteristics of at least one of the plants selected from the  
12 group of plants with ATCC accession numbers 203419, 203420, 203421, 203422, 203423, 203424,  
13 203425, 203426, 203427, 203428, 203429, 203430, 203431, 203432, 203433, aaaaa, bbbbb, ccccc,  
14 ddddd, eeeee, fffff, and ggggg.

1 2. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 imazethapyr, at levels of imazethapyr that would normally inhibit the growth of a rice plant.

1 3. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 imazapic, at levels of imazapic that would normally inhibit the growth of a rice plant.

1 4. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 imazapyr, at levels of imazapyr that would normally inhibit the growth of a rice plant.

1 5. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 nicosulfuron, at levels of nicosulfuron that would normally inhibit the growth of a rice plant.

1 6. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 sulfometuron methyl, at levels of sulfometuron methyl that would normally inhibit the growth of a rice plant.

1 7. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 imazaquin, at levels of imazaquin that would normally inhibit the growth of a rice plant.

1 8. A rice plant as recited in Claim 1, wherein the growth of said plant is additionally resistant to  
2 inhibition by primisulfuron, at levels of primisulfuron that would normally inhibit the growth of a rice plant.

1 9. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 imazamox, at levels of imazamox that would normally inhibit the growth of a rice plant.

1 10. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 chlorimuron ethyl, at levels of chlorimuron ethyl that would normally inhibit the growth of a rice plant.

1 11. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 metsulfuron methyl, at levels of metsulfuron methyl that would normally inhibit the growth of a rice plant.

1 12. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 rimsulfuron, at levels of rimsulfuron that would normally inhibit the growth of a rice plant.

1 13. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 thifensulfuron methyl, at levels of thifensulfuron methyl that would normally inhibit the growth of a rice plant.

1 14. A rice plant as recited in Claim 1, wherein the growth of said plant is additionally resistant to  
2 inhibition by tribenuron methyl, at levels of tribenuron methyl that would normally inhibit the growth of a rice  
3 plant.

1 15. A rice plant as recited in Claim 1, wherein the growth of said plant is resistant to inhibition by  
2 pyriithiobac sodium, at levels of pyriithiobac sodium that would normally inhibit the growth of a rice plant.

1 16. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203419, or is any progeny of the plant with ATCC accession number 203419; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203419.

1 17. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203420, or is any progeny of the plant with ATCC accession number 203420; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203420.

1 18. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203421, or is any progeny of the plant with ATCC accession number 203421; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203421.

1 19. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203422, or is any progeny of the plant with ATCC accession number 203422; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203422.

1 20. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203423, or is any progeny of the plant with ATCC accession number 203423; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203423.

1 21. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203424, or is any progeny of the plant with ATCC accession number 203424; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203424.

1 22. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203425, or is any progeny of the plant with ATCC accession number 203425; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203425.

1 23. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203426, or is any progeny of the plant with ATCC accession number 203426; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203426.

1 24. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203427, or is any progeny of the plant with ATCC accession number 203427; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203427.

1 25. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203428, or is any progeny of the plant with ATCC accession number 203428; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203428.

1 26. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203429, or is any progeny of the plant with ATCC accession number 203429; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203429.

1 27. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203430, or is any progeny of the plant with ATCC accession number 203430; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203430.

1 28. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203431, or is any progeny of the plant with ATCC accession number 203431; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203431.

1 29. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203432, or is any progeny of the plant with ATCC accession number 203432; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203432.

1 30. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number  
2 203433, or is any progeny of the plant with ATCC accession number 203433; wherein said plant has the  
3 herbicide resistance characteristics of the plant with ATCC accession number 203433.

1 31. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number aaaaa,  
2 or is any progeny of the plant with ATCC accession number aaaaa; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number aaaaa.

1 32. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number bbbbb,  
2 or is any progeny of the plant with ATCC accession number bbbbb; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number bbbbb.

1 33. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number ccccc,  
2 or is any progeny of the plant with ATCC accession number ccccc; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number ccccc.

1 34. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number ddddd,  
2 or is any progeny of the plant with ATCC accession number ddddd; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number ddddd.

1 35. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number eeeee,  
2 or is any progeny of the plant with ATCC accession number eeeee; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number eeeee.

1 36. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number fffff,  
2 or is any progeny of the plant with ATCC accession number fffff; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number fffff.

1 37. A rice plant as recited in Claim 1, wherein said plant is the plant with ATCC accession number ggggg,  
2 or is any progeny of the plant with ATCC accession number ggggg; wherein said plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number ggggg.

1 38. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 1, said process  
2 comprising applying a herbicide to the weeds and to the rice plant, wherein the herbicide comprises  
3 imazethapyr, imazapic, imazapyr, nicosulfuron, sulfometuron methyl, imazaquin, primisulfuron, imazamox,  
4 chlorimuron ethyl, metsulfuron methyl, rimsulfuron, thifensulfuron methyl, tribenuron methyl, pyriithiobac  
5 sodium, or a derivative of any of these herbicides.

1 39. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203419,  
2 or is any progeny of the plant with ATCC accession number 203419; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203419.

1 40. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203420,  
2 or is any progeny of the plant with ATCC accession number 203420; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203420.

1 41. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203421,  
2 or is any progeny of the plant with ATCC accession number 203421; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203421.

1 42. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203422,  
2 or is any progeny of the plant with ATCC accession number 203422; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203422.

1 43. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203423,  
2 or is any progeny of the plant with ATCC accession number 203423; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203423.

1 44. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203424,  
2 or is any progeny of the plant with ATCC accession number 203424; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203424.

1 45. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203425,  
2 or is any progeny of the plant with ATCC accession number 203425; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203425.

1 46. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203426,  
2 or is any progeny of the plant with ATCC accession number 203426; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203426.

1 47. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203427,  
2 or is any progeny of the plant with ATCC accession number 203427; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203427.

1 48. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203428,  
2 or is any progeny of the plant with ATCC accession number 203428; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203428.



1 49. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203429,  
2 or is any progeny of the plant with ATCC accession number 203429; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203429.

1 50. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203430,  
2 or is any progeny of the plant with ATCC accession number 203430; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203430.

1 51. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203431,  
2 or is any progeny of the plant with ATCC accession number 203431; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203431.

1 52. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203432,  
2 or is any progeny of the plant with ATCC accession number 203432; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203432.

1 53. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number 203433,  
2 or is any progeny of the plant with ATCC accession number 203433; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number 203433.

1 54. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number aaaaa,  
2 or is any progeny of the plant with ATCC accession number aaaaa; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number aaaaa.

1 55. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number bbbbb,  
2 or is any progeny of the plant with ATCC accession number bbbbb; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number bbbbb.

1 56. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number ccccc,  
2 or is any progeny of the plant with ATCC accession number ccccc; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number ccccc.

1 57. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number ddddd,  
2 or is any progeny of the plant with ATCC accession number ddddd; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number ddddd.

1 58. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number eeeee,  
2 or is any progeny of the plant with ATCC accession number eeeee; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number eeeee.

1 59. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number fffff,  
2 or is any progeny of the plant with ATCC accession number fffff; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number fffff.

1 60. A process as recited in Claim 38, wherein the plant is the plant with ATCC accession number ggggg,  
2 or is any progeny of the plant with ATCC accession number ggggg; wherein the plant has the herbicide  
3 resistance characteristics of the plant with ATCC accession number ggggg.

1   **61.**    A process for controlling weeds in the vicinity of a rice plant as recited in Claim 1, said process  
2   comprising applying a herbicide to the weeds and to the rice plant, wherein the herbicide comprises  
3   primisulfuron, triasulfuron, chlorsulfuron, imazamethabenz methyl, or a derivative of any of these herbicides.

1   **62.**    A herbicide-resistant rice plant, wherein:

2           **(a)** the growth of said herbicide-resistant plant is resistant to inhibition by at least one herbicide that  
3           normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit  
4           the growth of a rice plant; and

5           **(b)** said herbicide-resistant plant is a derivative of a rice plant obtained by exposing rice plants to  
6           mutation-inducing conditions; growing rice plants from the exposed plants, or growing rice plants  
7           from progeny of the exposed plants, in the presence of at least one herbicide that normally inhibits  
8           acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth of a rice  
9           plant; and selecting for further propagation rice plants that grow without significant injury in the  
10          presence of the herbicide; and

11          **(c)** said herbicide-resistant plant expresses a functional acetohydroxyacid synthase that is resistant  
12          to inhibition by at least one herbicide that normally inhibits acetohydroxyacid synthase, at levels of  
13          the herbicide that would normally inhibit the growth of a rice plant;

14   *provided that excluded from the scope of this Claim is:*

15          **(d)** a plant that is the plant with ATCC accession number 97523; and any mutant, recombinant, or  
16          genetically engineered derivative of the plant with ATCC accession number 97523 or of any progeny  
17          of the plant with ATCC accession number 97523; and any plant that is the progeny of any of these  
18          plants; wherein these derivatives of the plant with ATCC accession number 97523 that are excluded  
19          from the scope of this Claim are those that retain the herbicide resistance characteristics of the plant  
20          with ATCC accession number 97523.

1 63. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 62, said process  
2 comprising applying a herbicide to the weeds and to the rice plant, wherein the herbicide normally inhibits  
3 acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth of a rice plant.

1 64. A rice plant as recited in Claim 62, wherein the growth of said plant is resistant to inhibition by at  
2 least one imidazolinone herbicide that normally inhibits acetohydroxyacid synthase, at levels of the herbicide  
3 that would normally inhibit the growth of a rice plant.

1 65. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 64, said process  
2 comprising applying an imidazolinone herbicide to the weeds and to the rice plant, wherein the herbicide  
3 normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth  
4 of a rice plant.

1 66. A rice plant as recited in Claim 62, wherein the growth of said plant is resistant to inhibition by at  
2 least one sulfonylurea herbicide that normally inhibits acetohydroxyacid synthase, at levels of the herbicide  
3 that would normally inhibit the growth of a rice plant.

1 67. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 66, said process  
2 comprising applying a sulfonylurea herbicide to the weeds and to the rice plant, wherein the herbicide  
3 normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth  
4 of a rice plant.

1 68. A rice plant as recited in Claim 62, wherein the growth of said plant is resistant to inhibition by at  
2 least one herbicide selected from the group consisting of imazethapyr, imazapic, imazapyr, nicosulfuron,  
3 sulfometuron methyl, imazaquin, primisulfuron, imazamox, chlorimuron ethyl, metsulfuron methyl,  
4 rimsulfuron, thifensulfuron methyl, tribenuron methyl, and pyriithiobac sodium; at levels of the herbicide that  
5 would normally inhibit the growth of a rice plant.

1 69. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 68, said process  
2 comprising applying to the weeds and to the rice plant at least one herbicide selected from the group  
3 consisting of imazethapyr, imazapic, imazapyr, nicosulfuron, sulfometuron methyl, imazaquin, primisulfuron,  
4 imazamox, chlorimuron ethyl, metsulfuron methyl, rimsulfuron, thifensulfuron methyl, tribenuron methyl,  
5 and pyriithiobac sodium; at levels of the herbicide that would normally inhibit the growth of a rice plant.

1 70. A rice plant as recited in Claim 62, wherein the mutation-inducing conditions comprise exposing rice  
2 seeds to a mutagen.

1 71. A process for imparting herbicide resistance to rice plants, said process comprising the steps of:

2 (a) exposing rice plants to mutation-inducing conditions;

3 (b) growing rice plants from the exposed plants, or growing rice plants from progeny of the exposed  
4 plants, in the presence of at least one herbicide that normally inhibits acetohydroxyacid synthase, at  
5 levels of the herbicide that would normally inhibit the growth of a rice plant; and

6 (c) selecting for further propagation rice plants that grow without significant injury in the presence  
7 of the herbicide.

1 72. A process as recited in Claim 71, wherein the herbicide is selected from the group consisting of  
2 imazethapyr, imazapic, and imazapyr.

1 73. A process as recited in Claim 71, wherein said exposing step comprises exposing rice seeds to a  
2 mutagen.

1 74. A process as recited in Claim 71, wherein the plants selected for further propagation express a  
2 functional acetohydroxyacid synthase that is resistant to inhibition by at least one herbicide that normally  
3 inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth of a rice  
4 plant.

1 75. A herbicide-resistant rice plant, wherein:

2 (a) the growth of said herbicide-resistant plant is resistant to inhibition by at least one herbicide that  
3 normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit  
4 the growth of a rice plant;

5 (b) said herbicide-resistant plant expresses functional first and second resistant acetohydroxyacid  
6 synthases, each of which said resistant acetohydroxyacid synthases is resistant to inhibition by at least  
7 one herbicide that normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would  
8 normally inhibit the growth of a rice plant;

9 (c) said first and second resistant acetohydroxyacid synthases are not identical; and

10 (d) said first resistant acetohydroxyacid synthase is a mutated form of a first wild-type rice  
11 acetohydroxyacid synthase; and said second resistant acetohydroxyacid synthase is a mutated form  
12 of a second wild-type rice acetohydroxyacid synthase; wherein the first and second wild-type rice  
13 acetohydroxyacid synthases are different enzymes that are normally encoded by different genes of  
14 wild-type rice plants.

1 76. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 75, said process  
2 comprising applying a herbicide to the weeds and to the rice plant, wherein the herbicide normally inhibits  
3 acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth of a rice plant.

1 77. A rice plant as recited in Claim 75, wherein the growth of said plant is resistant to inhibition by at  
2 least one imidazolinone herbicide that normally inhibits acetohydroxyacid synthase, at levels of the herbicide  
3 that would normally inhibit the growth of a rice plant.

1 78. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 77, said process  
2 comprising applying an imidazolinone herbicide to the weeds and to the rice plant, wherein the herbicide  
3 normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth  
4 of a rice plant.

1 79. A rice plant as recited in Claim 75, wherein the growth of said plant is resistant to inhibition by at  
2 least one sulfonylurea herbicide that normally inhibits acetohydroxyacid synthase, at levels of the herbicide  
3 that would normally inhibit the growth of a rice plant.

1 80. A process for controlling weeds in the vicinity of a rice plant as recited in Claim 79, said process  
2 comprising applying a sulfonylurea herbicide to the weeds and to the rice plant, wherein the herbicide  
3 normally inhibits acetohydroxyacid synthase, at levels of the herbicide that would normally inhibit the growth  
4 of a rice plant.

1 81. A rice plant as recited in Claim 75, wherein said plant is a derivative of the plant with ATCC  
2 accession number 75295, and said plant additionally has the herbicide resistance characteristics of the plant  
3 with ATCC accession number 75295.